Review of A SPACE FOR SCIENCE: THE DEVELOPMENT OF THE SCIENTIFIC COMMUNITY IN BRAZIL, by Simon Schwartzman. x + 286 Pp.' tables, app., bibl., index. Revised translation. University Park: Pennsylvania State University Press, 1991. $32.50.

Donald B. Cooper, The Ohio State University, in *Luso-Brazilian Review*, vol. 31, n.1, Summer of 1994, p. 120-121

The basic purpose of this fine volume is to "draw a broad picture of the arrival and growth of empirical science in Brazil" (vii). Emphasis is placed on the biological and hard science - physics, chemistry, biology, the earth sciences - with some attention paid to technology, medicine, engineering, agriculture, and mathematics, and virtually none to the social sciences and the humanities. Printed sources, many of them little known, have been exhaustively consulted, but the core of the research is lengthy, open-ended interviews conducted in 1977 with some 70 Brazilian scientists.

Many readers will be familiar with the earlier Portuguese version of this book published in 1979. The present English edition has been revised, corrected, and updated, and is substantially a new volume. It offers an explicit interpretive framework, and a broad historical context, for readers who are not specialists in Brazilian studies. The book is therefore a reliable and instructive source for understanding the growth of Brazilian science, including both institutions of research and higher education. It also provides basic biographical and professional data on dozens of scientists, not only Brazilians but also foreigners who lived and worked in Brazil.

Schwartzman has written an honest, revealing, and pessimistic book. He uses the tale of Sisyphus as a metaphor for Brazilian science. "Cursed by the gods, Sisyphus was condemned to carry a large stone uphill, only to watch it roll back down, and start all over again" (1). Creating a "space for science" has been a difficult and uphill struggle in Brazil. A modest beginning 'was made in the long imperial period (1822-1889), but the few scientific institutions of the 19th century, such as the Botanical Garden and the Royal Museum, produced few lasting results.

In the early 20th century, however, against all odds, the Manguinhos Institute of Rio de Janeiro (later Oswaldo Cruz Institute) emerged as a significant center for both applied science and new research. Oswaldo Cruz and Carlos Chagas earned well deserved world wide reputations. It was the sole scientific center of distinction in that era. Conversely, the School of Medicine of Rio de Janeiro in the 1920s had "no practical courses, no seminars, no contacts between professors and students; only professional lectures..." (174).

In the 1930s, however, the "establishment of the Universidade de São Paulo in 1934 [became] the most important event in Brazil's scientific and educational history" (127). The School of Medicine in São Paulo

became the best of its kind in Brazil. It was a scientific reminder of the preeminent, indeed dominant, role of the city and state of São Paulo in the Brazilian federation.

Schwartzman credits Europeans (including Germans, Italians, Belgians, Frenchmen and Englishmen) and Americans with a major role in training Brazilian teachers and researchers. The Rockefeller Foundation in particular lent valuable assistance in fighting yellow fever, and in the construction of new scientific laboratories. In time American models were adopted as the standard for most Brazilian scientific institutions.

There is no question that this is the outstanding history in English of the development of empirical science in Brazil. It should have wide appeal to all Brazilianists, and historians of science; it is also a case study of the difficulties of creating "a space for science" in a so-called 'Third World" nation. It is in many respects a cautionary tale, a story of inadequate resources, of false starts and blind alleys, of governmental meddling and professional bungling. Furthermore, despite some advances in recent years, such as the expansion of the number of federal universities, and also the continued dogged persistence of numerous talented scientists, Schwartzman warns of "the ghost of premature decay is very present in Brazilian society..." In scientific terms there is much more science and technology than twenty years ago, "but it is clear that a space for science, in terms of socially defined, accepted, and institutionalized scientific roles, is barely there" (238). Sisyphus may be about to see the stone of scientific progress roll down the hill once more, another victim of the debt crisis and political instability in Brazil.